

論 文 要 旨

Association of wound, ischemia, and foot infection clinical stage
with frailty and malnutrition in chronic limb-threatening ischemia
patients undergoing endovascular intervention

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Objective: The Wound, Ischemia, and foot Infection (WIFI) clinical stage has been thought to have a prognostic value in Chronic limb-threatening ischemia (CLTI) patients, and frailty and nutritional status appear to represent pivotal factor affecting prognosis among CLTI patients. The purpose of this study was to examine clinical factors (including frailty and nutritional status) relevant to WIFI clinical stage.

Methods: This retrospective study investigated 200 consecutive CLTI patients. We individually assessed WIFI clinical stage, frailty according to the Clinical Frailty Scale (CFS) score, and malnutrition according to Geriatric Nutritional Risk Index (GNRI). We then compared mortality after endovascular intervention between a WIFI stage 1, 2 group and a stage 3, 4 group, and investigated associations between baseline characteristics (including CFS and GNRI) and WIFI clinical stage.

Results: Among 200 patients, 123 patients (62%) showed WIFI stage 1 or 2, and the remaining 77 patients (38%) had WIFI stage 3 or 4. CFS score was significantly higher in the WIFI stage 3, 4 group [median 6.0, interquartile range (IQR) 5.5–7.0] compared with the WIFI stage 1, 2 group (median 5.0, IQR 4.0–6.0, $p < 0.001$), and GNRI was significantly lower in the WIFI stage 3, 4 group (median 88, IQR 80–97) than in the WIFI stage 1, 2 (median 103, IQR 94–111, $p < 0.001$). Forty patients (20%) died after endovascular intervention. Incidences of all-cause and cardiac deaths were higher in the WIFI stage 3, 4 group than in the WIFI stage 1, 2 group (27% vs. 15%, $p = 0.047$ and 12% vs. 3%, $p = 0.040$, respectively). Kaplan–Meier analysis showed a significantly lower survival rate in the WIFI stage 3, 4 group than in the WIFI stage 1, 2 group ($p = 0.002$ by log-rank test). Multivariate logistic regression analysis using relevant factors from univariate analysis showed CFS score [odds ratio (OR) 2.06, 95% confidence interval (CI) 1.41–3.13, $p < 0.001$], diabetes mellitus (OR 3.17, 95%CI 1.17–8.61, $p = 0.023$) and GNRI (OR 0.93, 95%CI 0.89–0.97, $p = 0.002$) significantly associated with WIFI stage 3 or 4. In addition, multivariate ordinal logistic regression analysis for WIFI clinical stage showed CFS score (OR 1.43, 95%CI 1.09–1.89, $p = 0.011$), diabetes mellitus (OR 1.77, 95%CI 1.26–2.54, $p < 0.001$), and high-sensitivity C-reactive protein (OR 1.14, 95%CI 1.02–1.28, $p = 0.041$) were positively associated with WIFI clinical stage, and GNRI correlated negatively with WIFI clinical stage (OR 0.95, 95%CI 0.91–0.97, $p < 0.001$).

Conclusions: These results indicate that CLTI patients with high WIFI clinical stage may be more frail and malnourished, and be associated with poor prognosis after endovascular intervention.